

Appl. No. : 10/614,731
Filed : July 3, 2003

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A process for making thermoplastic resin coated articles, the process comprising:

applying an aqueous solution or dispersion of a first thermoplastic resin on the outer surface of an article substrate by dip, spray, or flow coating;

withdrawing the article from the dip, spray, or flow coating at a rate so as to form a first coherent film;

curing/drying the coated article until the first film is substantially dried so as to form a first coating;

applying an aqueous solution or dispersion of a second thermoplastic resin on the substantially dried first coating of the article substrate by dip, spray, or flow coating;

withdrawing the article from the dip, spray, or flow coating at a rate so as to form a second coherent film;

curing/drying the coated article until the second film is substantially dried so as to form a second coating;

~~wherein at least one of the first and second thermoplastic resins comprises a thermoplastic epoxy resin~~

wherein the first coating is an inner coating layer comprising a first phenoxy-type thermoplastic resin; and

wherein the second coating layer comprises a different coating material than the first phenoxy-type thermoplastic resin.

2. (Currently Amended) A process for making a thermoplastic resin coated article, the process comprising:

applying an aqueous solution or dispersion of a first thermoplastic epoxy resin on an outer surface of an article substrate by dip, spray, or flow coating;

withdrawing the article from the dip, spray, or flow coating at a rate so as to form a first coherent film;

curing/drying the coated article until the first film is substantially dried so as to form a first coating;

applying an aqueous solution or dispersion of a second thermoplastic resin selected from the group consisting of coating material selected from the group consisting

Appl. No. : 10/614,731
Filed : July 3, 2003

of polyester, acrylic, a second thermoplastic epoxy resin that is different from the first thermoplastic epoxy resin, paraffin, wax, polysilane and low molecular weight polyethylene, on an outer surface of an article substrate by dip, spray, or flow coating;

withdrawing the article from the dip, spray, or flow coating at a rate so as to form a first coherent film;

curing/drying the coated article until the first film is substantially dried so as to form a second coating;

wherein the first thermoplastic epoxy resin consists essentially of a Phenoxo-type thermoplastic resin; and

wherein the curing/drying is performed so as to form an article that exhibits substantially no blushing or whitening when exposed to water.

3. **(Currently Amended)** The process of claim 1 ~~further comprising the application of one or more additional coating layers to said article~~ wherein the different coating material is selected from the group consisting of polyesters, acrylics, a second thermoplastic epoxy resin that is different from the first thermoplastic epoxy resin, paraffin, wax, polysilane and low molecular weight polyethylene.

4. **(Original)** The process of claim 1 wherein at least one coating layer is crosslinked to provide chemical or mechanical abuse resistance.

5. **(Original)** The process of claim 1, wherein the article substrate comprises a polymer selected from the group consisting of polyesters, polyolefins, polycarbonates, polyamides and acrylics.

6. **(Original)** The process of claim 5, wherein the article substrate comprises amorphous and/or semi crystalline polyethylene terephthalate.

7. **(Original)** The process of claim 5, wherein said article comprises a preform.

8. **(Original)** The process of claim 1 which further comprises the removal of any excess material between the coating and curing/drying steps.

9. **(Original)** The process of claim 1 wherein said curing/drying source is selected from one or more of the group consisting of infrared heating, electron beam processing, forced air, flame curing, gas heaters, UV radiation, such that the coating is formed without undesirably heating the article substrate.

Appl. No. : 10/614,731
Filed : July 3, 2003

10. (Original) The process of claim 9 wherein said curing/drying source is infrared heating and forced air.

11. (Original) The process of claim 10 wherein the temperature of the forced air is between about 10°C to about 50°C and sufficient to prevent undesirable shrinkage of article while maximizing the removal of liquids without prematurely sealing the article's outer surface so as to entrap unexpelled liquid.

12. (Original) The process of claim 9 wherein said curing/drying source is infrared heating.

13. (Original) The process of claim 1 wherein said article is rotated to achieve consistent coating and curing/drying.

14. (Original) The process of claim 1 wherein said thermoplastic resin coatings comprise one or more of the following characteristics: gas-barrier protection, UV protection, scuff resistance, bluish resistance, and/or chemical resistance.

15. (Canceled)

16. (Original) The process of claim 15 wherein said phenoxy resin coating comprises hydroxy-phenoxyether polymers.

17. (Original) The process of claim 16 wherein said hydroxy-phenoxyether polymer coating comprises polyhydroxyaminoether copolymers made from resorcinol diglycidyl ether, hydroquinone diglycidyl ether, bisphenol A diglycidyl ether, or mixtures thereof.

18. (Original) The process of claim 15 wherein said solution or dispersion of the thermoplastic epoxy resin comprises organic acid salts made from the reaction of polyhydroxyaminoethers with phosphoric acid, lactic acid, malic acid, citric acid, acetic acid, glycolic acid and/or mixtures thereof.

19. (Original) The process of claim 3 wherein said third coating is an acrylic, phenoxy, latex, or epoxy coating that is crosslinked during the drying process.

20-51 (Canceled)

52. (Currently Amended) A process for making a thermoplastic resin coated preform, the preform having a neck portion and a body portion, the process comprising:

forming a first layer on a preform, the forming of the first layer comprises:

Appl. No. : 10/614,731
Filed : July 3, 2003

applying an aqueous solution or dispersion of a ~~first thermoplastic~~phenoxy type thermoplastic resin on an outer surface of a body portion of the preform by dip coating, spray coating, flow coating, or combinations thereof;

withdrawing the preform from the dip coating, spray coating, flow coating, or combinations thereof at a rate so as to form a first coherent film;

curing/drying the coated preform until the first film is substantially dried so as to form the first layer;

forming a second layer over the substantially dried first layer, the forming of the second layer comprises:

applying an aqueous solution or dispersion of a ~~second thermoplastic resin~~coating material selected from the group consisting of polyester, acrylic, a second thermoplastic epoxy resin that is different from the first thermoplastic epoxy resin, paraffin, wax, polysilane and low molecular weight polyethylene on the substantially dried first coating of the preform by dip coating, spray coating, flow coating, or combination thereof;

withdrawing the article from the dip coating, spray coating, flow coating, or combinations thereof at a rate so as to form a second coherent film; and

curing/drying the coated preform until the second film is substantially dried so as to form a second layer.

53. **(Previously Presented)** The method of Claim 52, wherein the curing/drying of the first thermoplastic resin and the curing/drying of the second thermoplastic resin are performed so as to form a multilayer preform that exhibits substantially no blushing or whitening when exposed to water.

54. **(Canceled)**

55. **(Previously Presented)** The method of Claim 52, further comprising providing a first flow coater and a second flow coater, the first flow coater being configured to apply the first thermoplastic resin on the outer surface of the body portion of the preform by flow coating, the second flow coater being configured to apply the second thermoplastic resin on the substantially dried first coating on the body portion of the preform by flow coating, the first coater and the second coater being spaced from each other along a processing line.

Appl. No. : 10/614,731
Filed : July 3, 2003

56. (Currently Amended) The method of Claim 55, wherein the curing/drying of the first film to form the first layer is performed as the ~~preform~~ preform is moved along the processing line between the first flow coater and the second flow coater.

57. (Previously Presented) The method of Claim 52, wherein the curing/drying of the first and second thermoplastic resins is performed so as to form an article that exhibits substantially no blushing or whitening when exposed to water.

58. (New) The method of Claim 1, wherein the first phenoxy-type thermoplastic resin comprises a PHAE.

59. (New) The method of Claim 1, wherein the second coating layer is a top coating layer.

60. (New) The method of Claim 1, wherein one or more top layers are disposed on the second coating layer.

61. (New) The method of Claim 60, wherein the one or more top layer comprises one or more selected from the group consisting of polyester, acrylic, a second thermoplastic epoxy resin that is different from the first thermoplastic epoxy resin, paraffin, wax, polysilane and low molecular weight polyethylene.

62. (New) The method of Claim 2, wherein the first Phenoxy-type thermoplastic resin is a PHAE.

63. (New) The method of Claim 2, wherein the second coating is the top coating layer.

64. (New) The method of Claim 2, wherein the one or more layers is disposed between the first and second coating layers.

65. (New) The method of Claim 63, wherein the coating material of the second coating layer is an acrylic.

66. (New) The method of Claim 63, wherein the coating material of the second coating layer is a polyester.

67. (New) The method of Claim 66, wherein the polyester comprises polyethylene terephthalate.

68. (New) The method of Claim 63, wherein the coating material of the second coating layer is a wax.

Appl. No. : 10/614,731
Filed : July 3, 2003

69. (New) The method of Claim 63, wherein the coating material of the second coating layer is a paraffin.

70. (New) The method of Claim 63, wherein the coating material of the second coating layer is a low molecular weight polyethylene.

71. (New) The method of Claim 63, wherein the coating material of the second coating layer is a polysilane.

72. (New) The method of Claim 63, wherein the coating material of the second coating layer is a different thermoplastic epoxy resin.

73. (New) The method of Claim 52, wherein the first Phenoxy-type thermoplastic resin is a PHAE.

74. (New) The method of Claim 73, wherein the coating material of the second coating layer is a paraffin.

75. (New) The method of Claim 73, wherein the coating material of the second coating layer is a wax.

76. (New) The method of Claim 73, wherein the coating material of the second coating layer is a thermoplastic epoxy resin different than the phenoxy-type thermoplastic.

77. (New) The method of Claim 73, wherein the coating material of the second coating layer is a low molecular weight polyethylene.

78. (New) The method of Claim 73, wherein the coating material of the second coating layer is a polyester.

79. (New) The method of Claim 78, wherein the polyester comprises polyethylene terephthalate.

80. (New) A process for making a thermoplastic resin coated articles, the process comprising:

applying an aqueous solution or dispersion of a first thermoplastic epoxy resin on an outer surface of an article substrate by flow coating;

curing/drying the coated article until the first film is substantially dried so as to form a first coating layer;

applying an aqueous solution or dispersion of a second thermoplastic resin that is different than the first thermoplastic epoxy resin by flow coating; and

Appl. No. : 10/614,731
Filed : July 3, 2003

curing/drying the coated article until the first film is substantially dried so as to form a second coating layer.

81. (New) The process of Claim 80, wherein the first coating layer comprises a Phenoxy-type thermoplastic.

82. (New) The process of Claim 80, wherein the first coating layer comprises a PHAE.

83. (New) The process of Claim 80, wherein the second coating layer is partially or fully cross linked.

84. (New) The process of Claim 83, wherein the second coating layer is a top coating layer.

85. (New) The process of Claim 80, wherein the second coating layer is a top coating layer.

86. (New) The process of Claim 85, wherein an intermediate layer is between the first and second coatings.

87. (New) The process of Claim 84, wherein an intermediate layer is between the first and second coatings.

88. (New) The process of Claim 85, wherein the top coating layer comprises polyester.

89. (New) The process of Claim 88, wherein the polyester is a sulfonated polyester resin.

90. (New) The process of Claim 84, wherein the top coating layer comprises an acrylic.

91. (New) The process of Claim 85, wherein the top coating layer comprises an acrylic.

92. (New) The process of Claim 80, wherein the first or second coating layers comprise a cross linking additive to increase adhesion to the article.

93. (New) The process of Claim 80, wherein the article substrate comprises PET.

94. (New) The process of Claim 80, wherein the article substrate comprises polypropylene.

95. (New) The process of Claim 80, wherein the first or second coating layers comprises one or more selected from O₂ scavengers and CO₂ scavengers.